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The Role of Team Learning in Enabling Shared Leadership in ISD Teams

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ABSTRACT

IS Leadership is distinctive from leadership in general because of the special interface between Information Technology and business. As the increasing complexity and interdependence in the Information Systems Development (ISD) context, this study proposes to examine the IS leadership from a distributed team level. Based upon Social Interdependence Theory, we argue that the inherent high level of positive interdependence in the ISD context determines the team members' interaction patterns which result in team leadership and team learning. The empirical evidence will be collected to test the model. The study results will benefit the understanding of team leadership in ISD context and explore the relationship between team leadership and team learning.

Keywords

Shared leadership, team learning, interdependence

Introduction

One very important consideration to ensure the ISD projects are successful is to have an effective project manager who has the time and resources to get the job done. Leadership of IS projects is a critical element leading to the success of IS projects (Karahanna & Watson, 2006). An effective project manager can contribute to the project success by guiding the teamwork, acquiring the resources, motivating and empowering the team members. The trend of becoming certified project managers in the industry is a strong evidence for the need of project management leadership.

While the critical role of project managers has been emphasized and reinforced, the leadership provided by the team members has been largely neglected (Pearce, C. L., Sims, Cox, Ball, & et al., 2003; Pearce, Craig L., 2004). Individual leadership might not be sufficient due to the special characteristics of ISD projects. First, the information systems that the ISD teams are supposed to design become more and more complex and ambiguous. The overwhelming complex product design and development push the individual project manager rely more and more on the team members' expertise and problem solving skills to perform the leadership function (Day, Gronn, & Salas, 2004). Second, the cross-functional nature of the teamwork emphasizes integration of expertise from different functional areas and motivates team members to apply their knowledge and skills in an innovation way and therefore team members desire greater opportunity to shape and participate in the leadership functions for their teams. Further, the presence of various collaboration technologies makes the information shared among the team members. The barriers of in-equity in information access have been removed and empowered the team members to exercise leadership functions. Despite this transition in leadership responsibilities from formal managers to team members, relatively little research has addressed the implications of this evolutionary shift to internally distributed forms of team leadership (Pearce, C. L. & Conger, 2003).

Distributed leadership or shared leadership has been promoted to emphasize the importance of team members (Avolio, Bruce J., Walumbwa, & Weber, 2009; Carson, Tesluk, & Marrone, 2007; Pearce, C. L. & Conger, 2003). Carson et al. (2007) define shared leadership as an emergent team property that results from the distribution of leadership influence across multiple team members. It represents a condition of mutual influence embedded in the interactions among team members that can significantly improve team and organizational performance (Day et al., 2004). Shared leadership contrasts with the

conventional paradigm (referred to as “vertical leadership” by Pearce and Sims (2002)). Vertical leadership emphasizes the role of the manager who is positioned hierarchically above and external to a team, has formal authority over the team, and is responsible for the team’s processes and outcomes (Mathieu, Maynard, Rapp, & Gilson, 2008).

Although a few studies have helped advance the concept of shared leadership (Avolio, B. J., Jung, & Sivasubramaniam, 1996; Pearce, C., L. et al., 2003; Sivasubramaniam, Murry, Avolio, & Jung, 2002), some challenges and opportunities (Day et al., 2004) motivated this study. One of challenges of shared leadership is to study team leadership in context (Day et al., 2004). Theoretically speaking, team leadership should be appropriate in the ISD teams since the ISD context has the special features such as interdependence, creativity and complexity (Kraut & Streeter, 1995; Pearce, C. L. & Conger, 2003). However, as Locke (Locke, 2003) pointed out the single form of team leadership in a for-profit environment is not realistic because of lack of accountability. We argue that the hybrid leadership forms which mix traditional leadership styles and shared leadership should be studied in the ISD context.

The past literature has no consistent results in the relationship of team leadership and team performance. We believe that one critical missing factor for the success of shared leadership in knowledge-intensive teamwork context is team learning. Only the teams that are capable of continuous learning and applying what they have learned at the ongoing team process can be more likely to succeed through shared leadership. Therefore the research question is “Will and How team learning enhances the impacts of team leadership on ISD project success?” This study integrates two streams of research, the team learning and shared leadership research. Based upon Social Interdependence Theory, this paper argues that the inherent interdependence between IS project team members determines the team interaction pattern, which leads to outcomes that facilitate team learning and team leaderships, leading to the project success. The outcomes of this study will fill in the gap between shared leadership and team learning and provide a feasible way to enhance the success likelihood of team leadership in the ISD context.

Literature Review

With the shift toward team-based knowledge work, the leadership models have been changed towards distributed leadership or shared leadership (we use these two terms interchangeably). Distributed leadership has been interpreted in a number of ways. All the understandings are consistent in recognizing the distributed leadership is team members’ recurrent influence at the group level (Locke, 2003; Mayo, Meindl, & Pastor, 2003; Pearce, C., L. et al., 2003). Shared leadership is a relational phenomenon involving mutual influence between team members as they work toward team objectives (Carson et al., 2007).

Shared leadership has been found as a strong predictor of team effectiveness in change management teams, in consulting teams and in knowledge work context (Carson et al., 2007; Mehra, Smith, Dixon, & Robertson, 2006; Pearce, C., L. et al., 2003; Pearce, Craig L. & Sims, 2002). Pearce and Sims (2002) investigated vertical versus shared leadership as predictors of the effectiveness of 71 change management teams. This study found both vertical and shared leadership to be significantly related to team effectiveness ($p < .05$), although shared leadership appears to be a more useful predictor of team effectiveness than vertical leadership. Carson et al. (Carson et al., 2007) found that internal team environment including shared purpose, social support, and voice, and external coaching were important predictors of shared leadership emergence in 59 consulting teams. In turn, shared leadership was found to predict team performance as rated by clients. But the extent of shared leadership must be consistent with the team structure (Mehra et al., 2006).

Day et al. (2004) argues for a leadership capacity perspective. They argue that a team can build its leadership capacity through learning and accomplishing the team goals. In this manner, leadership capacity is a resource that a team can draw from in subsequent performance episode. Based upon this leadership capacity perspective, team learning should be an important factor that contributes to the effect of team leadership on team performance. Team learning is “an ongoing process of reflection and action, characterized by asking questions, seeking feedback, experimenting, reflecting on results and discussing errors or unexpected outcomes of actions” (Edmondson, 1999). Team psychological safety and team efficacy are the antecedents of team learning (Edmondson, 1999). Individual leaders matter in creating teamwork and building team learning that are necessary preconditions for team-level leadership capability.

Proposed Model

The basic premise of social interdependence theory is that the type of interdependence structured in a situation determines how individuals interact with each other, which, in turn, determines outcomes (Johnson & Johnson, 1998). Essentially, in

cooperative situations, the actions of participations substitute for each other, participants positively invest mental or emotional energy on each other's effective actions, and there is high level of openness to influence.

The high level of task interdependence in the ISD teams requires plenty interactions between team members. Team members have the opportunity to influence the motivations and provide supports to the team members. The collaboration technology enables the rich information sharing. It is the common knowledge before the decision-making determines the decision-making outcomes (Gigone & Hastie, 1993). The task characteristics and team collaboration environment also support the team learning, which emphasizes the mutual learning through interactions. Based upon Social Interdependence Theory, we propose a model that the task interdependencies in ISD teams can lead to promotive interactions which tends to result in a wide variety of outcomes such as high effort to achieve, positive relationships and psychological health. These outcomes will have positive impact on the team leadership and team learning which positively contribute to the ISD team performances (See Figure 1 for the proposed model).

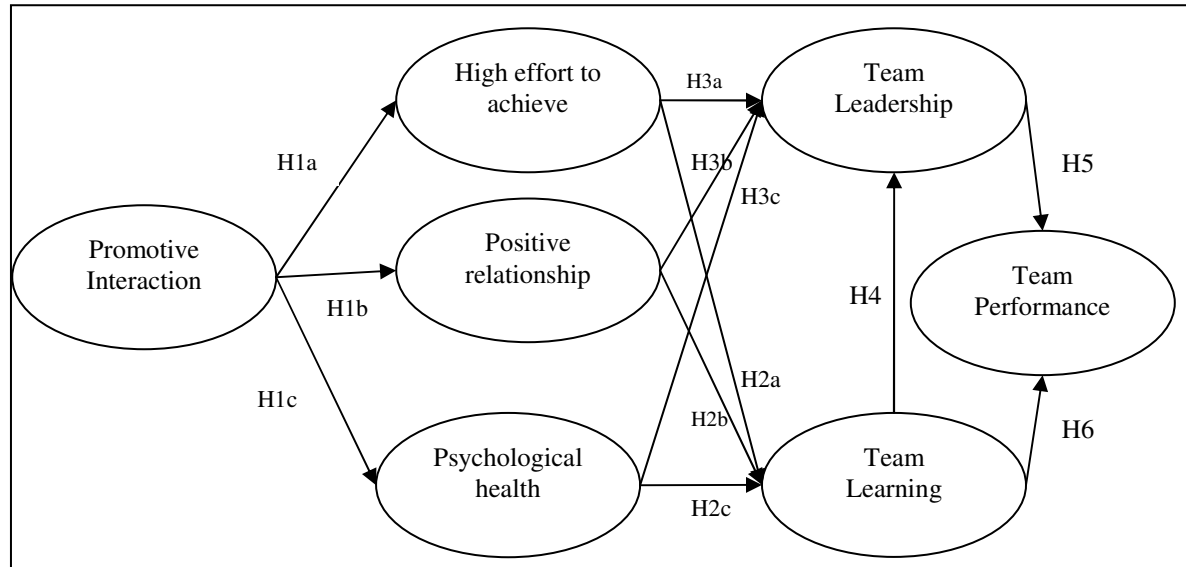


Figure 1. The proposed Model

Hypotheses Development

The high level task interdependence creates promotive interactions among the ISD team members. Promotive interaction occurs as individuals encourage and facilitate each other's efforts to reach the group's goals. Group members promote each other's success by giving and receiving help and assistance, exchanging resources and information, giving and receiving feedback on task work and team work behaviors, challenging each other's reasons, advocating increased efforts to achieve, mutually influencing each other's reasoning and behaviors, engaging in the interpersonal and small group skills needed for effective teamwork and processing how effectively group members are working together and how the group's effectiveness can be continuously improved (Johnson & Johnson, 1998). Therefore based upon Social Interdependence Theory, these hypotheses are proposed:

H1a: A high level of promotive interaction will be positively related to a high level of effort to achieve group goals.

H1b: A high level of promotive interaction will be positively related to a high level of positive relationships between team members.

H1c: A high level of promotive interaction will be positively related to a high level of psychological health in the team.

In addition to the outcomes including high effort to achieve, positive relationships and psychological health, the promotive interaction can result in more willingness to take on difficult tasks and persist, despite difficulties, long term retention of what is learned, higher-level reasoning, critical thinking, and meta-cognitive thought (Johnson & Johnson, 1998). Team members can benefit from the promotive interaction by transferring learning from one situation to another, developing positive

attitudes toward the tasks being completed and spending more time on task and achieving more team success in terms of learning. As a result of the promotive interactions, team members are willing to spend more time in completing the tasks. The psychological adjustment and social competence encourage them to ask questions, seek feedback and experiment new ideas (Edmondson, 1999). The positive relationships allow them to feel free to discuss errors and provide feedbacks to other team members. The positive interdependence in the team can lead to the team learning. Therefore the following hypotheses are developed.

H2a: The high level of effort to achieve team goals will be positively related to team learning.

H2b: The large extent of positive relationship will be positively related to team learning.

H2c: The high level of psychological health in the team will be positively related to team learning.

The high level of positive interdependence in the ISD team determines the team members to work towards the common team goals. As experts in each functional area, the team members have the intrinsic motivation to learn, the high expectations for success, and high epistemic curiosity in creating new knowledge and discovery (Johnson & Johnson, 1998). The task interdependence and team based rewards require them to share information and interpret ambiguous tasks and figure out the implications for their teamwork. The scientific experiment spirit pushes them to seek the truth by high-level reasoning, critical thinking and meta-cognitive thoughts. The experts in the essential area gradually take the leadership role in directing the teamwork and others follow to solve the problems collaboratively and innovatively. The positive relationships in the ISD teams and the supportive environment which removes the barriers of team leadership at the psychological safety level are critical antecedents of shared leadership (Carson et al., 2007). Therefore the outcomes of positive interdependence will lead to team leadership. We propose the following hypotheses:

H3a: The high level of effort to achieve team goals will be positively related to team leadership.

H3b: The large extent of positive relationship will be positively related to team leadership.

H3c: The high level of psychological health in the team will be positively related to team leadership.

While in the past leadership stem from an individual in a top-down process, leadership becomes shared, distributed, and emergent that becomes the input for the next teamwork cycle (Day et al., 2004). A team can build its leadership capability through interacting with the goal of accomplishing shared work as long as the team is also intentional or purpose-driven around the learning and development. In this manner, leadership capacity is a resource that a team can draw from in subsequent performance episode (Day et al., 2004). The creation of a collective (i.e. team-based) social identity serves as a potent leadership resource. It is also the resource for developing team social capital. Team learning can enhance the social capital and increase the team members' awareness of the overall group identity, consequently increase the team members' taking leadership functions in the emergent situations. Therefore Hypothesis 4 is proposed that

H4: Team learning will be positively related to team leadership.

When shared leadership is exercise in the team, the teams usually have achieved a level of maturity in terms of understanding each other's expertise area, having a high level of trust, willing to lead at the right moment and being open to be influenced or lead by other team members. This intangible valuable team asset enables the teams more likely to succeed in complex tasks such as information systems development. Pearce and Sims (2002) studied the relationship between shared leadership and change management team effectiveness and found shared leadership to be a more useful predictor than the vertical leadership of appointed team leaders. In the knowledge-intensive project context, the shared leadership is more likely to lead to the team success because of the high level of team member involvement and collaboration. Therefore it is proposed that:

H5: Team leadership will be positively related to team performance.

Team learning becomes a critical success factor when the task is innovative and full of uncertainty along the process. When team members actively discuss problems and seek solutions for the problems, the likelihood of project success is increased. The shared leadership also increases team members' accountability, sense of team identity and ownership of the projects. Therefore it is proposed that:

H6: Team learning will be positively related to team performance.

Methodology

A survey methodology will be used to empirically test the proposed model. The participant will be ISD team members and project leaders. Team members will answer the questions related to independent variables including promotive interactions, high effort in achieving goals, positive relationships, psychological health, team leadership and team learning. Project managers/leaders will answer the questions related to team performance. The estimated sample size will be 150 teams. All the construct measures are adopted from the existing literature. A five point likert scale will be used in the survey.

- Promotive Interaction includes team communication. A large extent of team communication will facilitate the information sharing and help each team member to accomplish the interdependent tasks. Five items will be used to measure this construct (Eng, 2006).
- High effort in achieving the goals refers to the team's coordination effort to achieve the project goals. Coordination in software development team refers to different people working on a common project agree to a common definition of what they are building, share information, and mesh their activities (Kraut & Streeter, 1995). Seven items will be used to measure the team coordination (Kraut & Streeter, 1995).
- The team trust can be a good indicator of positive relationship. Five items are used to measure this construct (Eng, 2006).
- Psychological safety refers to a shared belief that the team is safe for interpersonal risk taking (Edmondson, 1999). Seven items are used to measure this construct (Edmondson, 1999). Sample item is "If you make a mistake on this team, it is often held against you."
- Team leadership refers to an emergent team property resulting from leadership functions being distributed across multiple team members rather than arising from a single, formal leader (Carson, Tesluk, & Marrone 2007). 14 items are used to measure this construct (Day et al. 2004).
- Team learning refers to an ongoing process of reflection and action, characterized by asking questions, seeking feedback, experimenting, reflecting on results, and discussing errors or unexpected outcomes of actions (Edmondson, 1999). Seven items are used to measure this construct (Edmondson, 1999). Sample item is "We regularly take time to figure out ways to improve our team's work process."
- Team performance is measured by 7 items and includes the schedule, budget, cost and effectiveness (Nidumolu 1995).

A list of alumni list from a prestigious university will be obtained. 300 alumni in the telecommunication and IT industries will be randomly selected and contacted by email. For those who agree to participate, a link will be provided and a link to the project manager survey will be asked to forward to the matched project manager. We plan to use In this study, PLS-Graph Version 3.01 (Chin, 1994) to verify the measurement and test hypotheses. PLS is a latent structural equation modeling technique that uses a component-based approach to estimation that examines both the measurement model and the structural model.

Summary

IS Leadership is distinctive from leadership in general because of the special interface between Information Technology and business (Karahanna & Watson, 2006). Traditional styles of leadership which are more directive and hierarchical in nature, because they delineate clear lines of leadership control, might not be very effective in ISD context which characterizes interdependence, innovation and complexity. Faraj and Sambamurthy (2006) found that traditional vertical leadership and empowering leadership should be exercised contingent upon the task uncertainty and professional experiences. As the increasing complexity and interdependence in the ISD development, this study proposes to examine the IS leadership from a distributed team level. Based upon Social Interdependence Theory, we argue that the inherent high level of positive interdependence in the ISD context determines the team members' interaction patterns which result in team leadership and team learning. The empirical evidence will be collected to test the model. The study results will benefit the understanding of team leadership in ISD context and explore the relationship between team leadership and team learning. As in any study, this paper has the limitation that only a limited set of mediators are examined. Future studies can consider exploring what is the

role of vertical leaders (project managers) in developing shared leadership and what shared leadership behaviors can enhance the ISD team performances.

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